

Supporting Information

Non-enzymatic electrochemical biosensor based on Au@PBA(Ni-Fe):MoS₂ nanocubes for stable and sensitive detection of hydrogen peroxide released from living cells

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The supporting information contains a supplement of results and discussion.

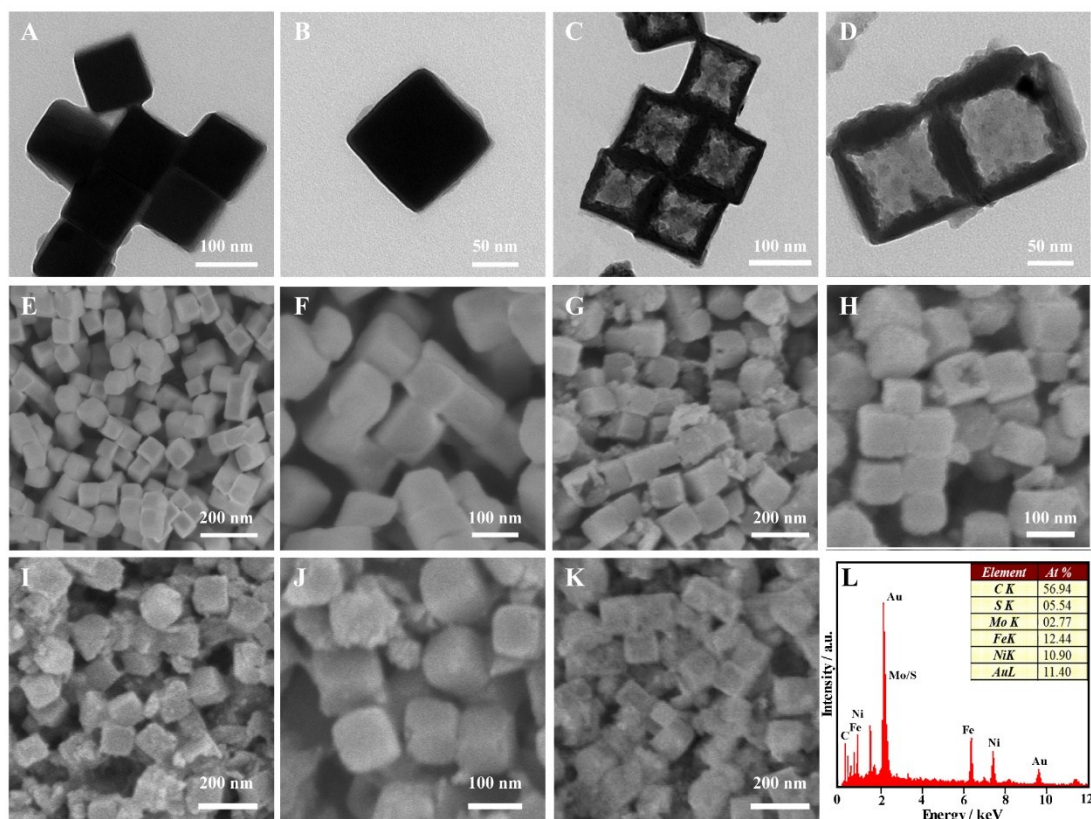


Fig. S1 (A-D) TEM images of PBA(Ni-Fe) and PBA(Ni-Fe):MoS₂, (E-H) SEM images of PBA(Ni-Fe) and PBA(Ni-Fe):MoS₂, (I-J) SEM images of Au@PBA(Ni-Fe):MoS₂, (K) SEM images of Au@PBA(Ni-Fe):MoS₂ after electrochemical test, (L) EDS spectrum of Au@PBA(Ni-Fe):MoS₂.

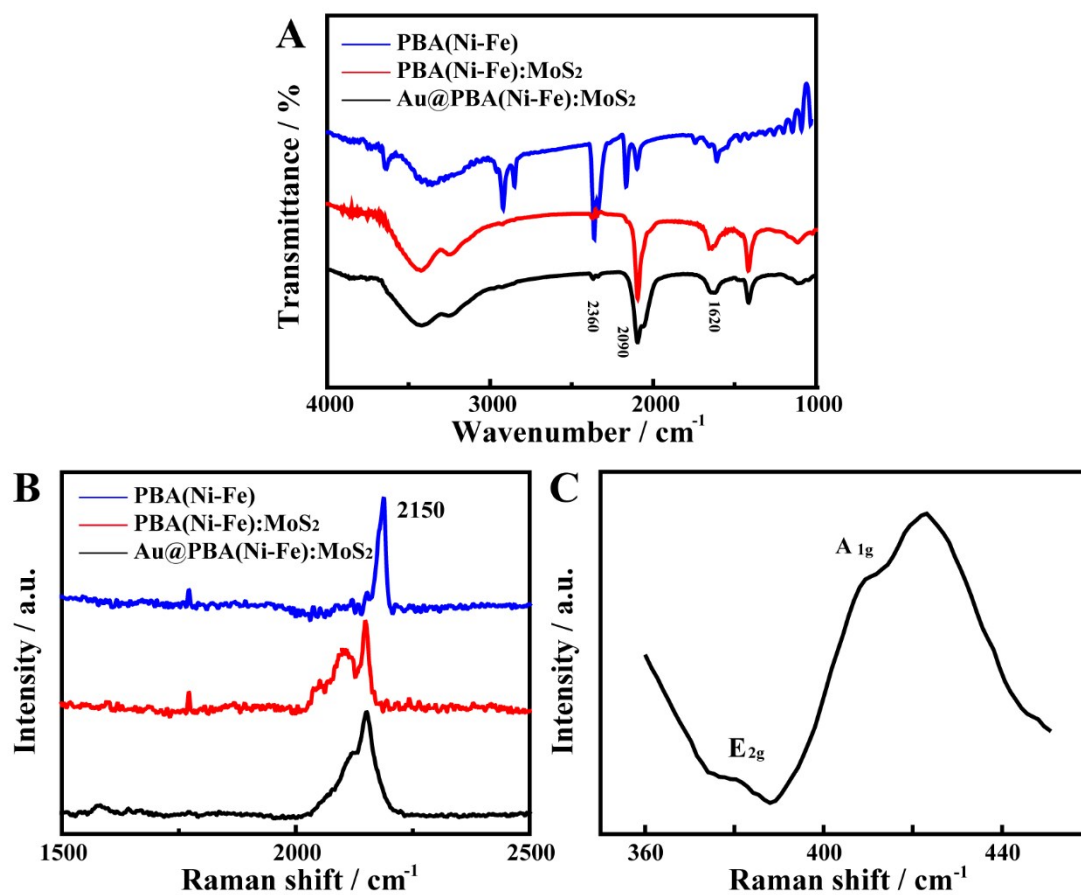


Fig. S2 (A) FT-IR spectra and (B-C) Raman spectra of PBA(Ni-Fe), PBA(Ni-Fe):MoS₂, Au@PBA(Ni-Fe):MoS₂

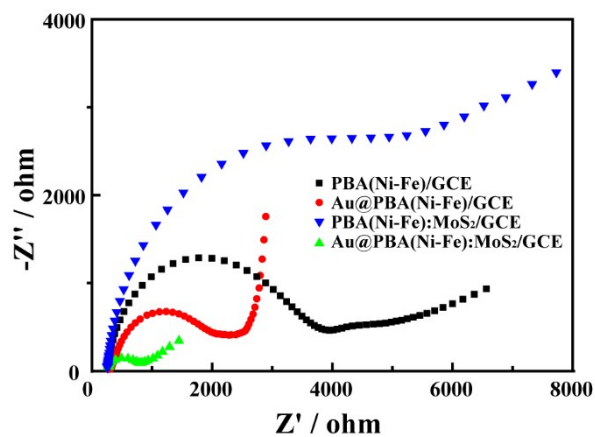


Fig. S3 EIS behaviors of the PBA(Ni-Fe)/GCE, Au@PBA(Ni-Fe)/GCE, PBA(Ni-Fe):MoS₂/GCE and Au@PBA(Ni-Fe):MoS₂/GCE in presence of 5 mM [Fe(CN)₆]^{3-/4-} solution containing 0.1 M KCl at 0.235 V.

Table S1.Comparison of Different Electrochemical Sensors for the Detection of H₂O₂.

Sensor	Linear range (μM)	Detection limit (μM)	Referenc e
PEDOT-PBNPs	5-1000	1.4	[1]
Ag NWs	6-10000	2	[2]
Bimetallic Nanocrystals	-	8.4	[3]
CAT/MoS₂-Au/chitosan/GCE	0.5-200	0.1	[4]
PBNPs/PoPD/GCE	1-58.22	0.8	[5]
Sol-gel–PB glassy carbon electrode	3-210	0.6	[6]
MoS₂/Pt	1-100	0.686	[7]
Au@PBA(Ni-Fe):MoS₂/GCE	0.5-200 and 210-3000	0.23	This work

References

- (1) C. Lete, M. Marin, E. M. Anghel, L. Preda, C. Matei and S. Lupu, *Mater. Sci. Eng., C.*, 2019, **102**, 661-669.
- (2) X. Qin, H.C. Wang, Z.Y. Miao, J.L. Li and Q. Chen, *Talanta.*, 2015, **139**, 56-61.
- (3) T.T. Han, Y. Zhang, J.Q. Xu, J.P. Dong and C.C. Liu, *Sens. Actuators, B.*, 2015, **207**, 404-412.
- (4) Y. Shu, J. Chen, Q. Xu, Z. Wei, F. Liu, R. Lu, S. Xu and X. Hu, *J. Mater. Chem. B.*, 2017, **5**(7), 1446-1453.
- (5) R. Ojani, P. Hamidi and J.B. Raoof, *Chinese Chem Lett.*, 2016, **27**(3), 481-486.
- (6) J. Yang, M. Lin, M. Cho and Y. Lee, *Microchim. Acta.*, 2015, **182**(5-6), 1089-1094.
- (7) J. X. Zhou, L.N. Tang, F. Yang, F.X. Liang, H. Wang, Y.T. Li and G.J. Zhang, *Analyst.*, 2017, **142** (22), 4322-4329.